

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of)
)
Auction of Advanced Wireless Services)	AU Docket No. 06-30
Licenses Scheduled for June 29, 2006)	
(Auction No. 66))

COMMENTS OF LEAP WIRELESS INTERNATIONAL, INC.

Leap Wireless International, Inc., and its subsidiaries (collectively, “Leap”) submit these comments in response to the Commission’s request for input on auction procedures proposed for licensing Advanced Wireless Service (“AWS”) spectrum on June 29, 2006.¹

The AWS auction promises to be one of the most significant spectrum auctions since the original allocation and assignment of PCS spectrum in the 1990s, and is proceeding on a very compressed time frame. In this regard, the *Auction 66 PN* appropriately poses many of the standard questions and proposed tweaks of the Commission’s simultaneous multiple-round (“SMR”) auction methodology that attends every spectrum auction. However, certain proposals here – such as the possible introduction of package bidding or a proposed massive reduction in the transparency and information available to bidders – seek to revise the SMR approach in a fashion that is exceedingly unwise for an auction of this scale, scope and importance.

¹ See *Public Notice*, Auction of Advanced Wireless Services Licenses Scheduled for June 29, 2006, AU Docket No. 06-30 (rel. Jan. 31, 2006) (“Auction 66 PN”).

While Leap does not object generally to such experimentation in auctions of lesser magnitude, major alteration of the SMR auction methodology at this juncture – which is well understood by wireless marketplace participants and the financial community – will generate uncertainty and confusion. Leap offers more specific comment on the Commission’s proposals below.

I. THE COMMISSION SHOULD HOLD A SINGLE SMR AUCTION AS PROPOSED

The Auction 66 PN proposes to auction all of the AWS-1 licenses “in a single auction using the Commission’s standard SMR auction format.”² The Auction 66 PN also seeks comment, however, on alternative proposals that would add a package bidding format (“SMR-PB”) to the mix for some of the licenses, in either one or two separate auctions.³

Leap strongly believes that all 1,122 AWS-1 licenses should be auctioned in a single standard SMR auction, for the reasons stated in the Auction 66 PN:

[O]ffering all licenses in a single standard SMR auction will provide bidders with the simplest and most flexible means of obtaining single AWS-1 licenses or aggregations of AWS-1 licenses. A single auction will apply a single set of familiar rules to all bidders, bids and licenses. Bidders interested in licenses in several blocks will not have to try to manage their bidding activity and eligibility across two auctions, as they might if the different blocks were offered in two different auctions.⁴

² *Id.* at 4.

³ *Id.* at 5.

⁴ *Id.*

All of these reasons are sound. By contrast, Leap believes that the introduction of a package bidding format for this auction is a very bad idea.

Package bidding in general can have both benefits and costs. The chief benefit of package bidding is that it allows bidders to avoid what is called an *exposure* problem. If a bidder truly values a particular combination of licenses more than he would value the sum of each license individually, a package bidding system allows him to avoid the exposure risk that would otherwise obtain if he were forced to accumulate the components of the package serially, with the attendant risk that all components of the package might not be obtained.⁵

However, the Commission has already implemented a band plan for AWS licenses that partially undermines the chief claimed benefit of an SMR-PB auction. The Commission has created 36 licenses to serve Regional Economic Area Groupings (“REAGs”), which are already so large that there is unlikely to be an exposure problem in the bidding for these licenses. An SMR-PB proposed for the REAGs thus will not provide any of the intended benefits of that auction methodology.

More fundamentally, Leap and other parties in the past have expressed concerns that particular versions of package bidding being explored by the

⁵ For example, if a firm puts a value of x on license A and values license B at y , that bidder may place a value of $z > x + y$ on the two licenses together. If, in this type of situation, the price of license A, p_A , exceeds x , and the price of license B, p_B , exceeds y , but $p_A + p_B < z$, then the bidder would bid willing to remain in the bidding for both A and B, but only if that bidder was confident that it would not get stuck with only one of the two licenses. A package bid allows the bidder to submit a single bid for both licenses and thereby avoid this exposure problem.

Commission are both overly complex and biased against smaller or regional bidders.⁶ In terms of computational complexity, allowing bidders to specify arbitrary numbers of packages greatly complicates the set of possibilities, to the point that there could be an unfathomably large number of possible packages.⁷ Furthermore, a set of smaller or regional bidders each interested in one or a few licenses may have difficulty in competing effectively with a large package bidder, due to what is called the *threshold* problem. The threshold problem occurs when small bidders cannot raise their bids enough to beat out a large bidder, even though the aggregate value of the small bidders may be greater than the large bidder's value. Indeed, the Auction 66 PN casts this problem as yet another one of added complexity for smaller bidders:

In an SMR-PB auction, bidders may need to place a large number of bids in order to completely express their interests. If they do not place their bids, the system may not be able to find a consistent set of smaller bids that collectively exceed the amount of a large package bid, thereby potentially making it more difficult for bidders interested in small groups or single licenses to compete against bidders interested in large aggregations.⁸

⁶ See, e.g., *In the Matter of Experimental Design for Examining Performance Properties of Simultaneous Multiple Round Spectrum License Auctions With and Without Combinatorial Bidding*, DA No. 05-1267, Comments of Leap Wireless International, Inc. (June 1, 2005); Comments of Telephone and Data Systems, Inc. and United States Cellular Corporation (June 1, 2005).

⁷ The *Auction 66 PN* notes that an auction with N individual licenses will have $2^N - 1$ packages. See *Auction 66 PN* at 5, n.20. Thus, if N = 12, then there are 4,095 licenses; if N = 20, then there are over 1 million possible packages; and if N = 30, then there are over 1 billion possible packages.

⁸ *Auction 66 PN* at 5.

The SMR-PB format has other drawbacks. One is that it increases auction duration. The Commission has conducted several rounds of laboratory experiments with test (student) subjects of the SMR-PB. These experiments, while informative and encouraging, are of limited value in assessing the benefits of package bidding. But of significance is the experiments' suggestion that, even in simplified scenarios, an SMR-PB auction is likely to take three or four times as many rounds to complete as an SMR auction with the same number of licenses.⁹

Finally, the SMR-PB introduces other complexities that increase the cost of bidder participation. For example, the SMR-PB contains the provision that bids in one round are mutually exclusive from bids that the same bidder submits in a different round. This means that a bidder will have a great deal of additional information to track during the auction. In particular, each bidder will want to track all bids in all rounds to ascertain what new bids might improve on all previous combinations of offers that all bidders made in all previous rounds. This is an enormous amount of information for bidders to manage.

The bottom line is that Auction No. 66 is simply ill-suited to become a major package bidding experiment. The AWS spectrum to be licensed is far too valuable a resource for the Commission to introduce the complexity, uncertainty and biases that would likely attend an SMR-PB auction. The Bureau has concluded that the SMR auction format, together with the bandplan that the Commission has crafted

⁹ See, e.g., Cybernomics, Inc., *An Experimental Comparison of the Simultaneous Multi-Round Auction and the CRA Combinational Auction* (Mar. 15, 2000), at 3. Available at <http://wireless/fcc.gov/auctions/combin2000/releases/98540191.pdf>.

for AWS spectrum, “will provide bidders with the opportunity to create efficient aggregations of licenses without creating the difficulties that a package bidding format may introduce for bidders trying to win single licenses or smaller groups of licenses.”¹⁰ Leap agrees.

II. THE COMMISSION SHOULD CONTINUE TO PROMOTE TRANSPARENCY AND INFORMATION DISCLOSURE IN THE SMR AUCTION PROCESS

In general, since shortly after the inception of U.S. spectrum auctions, the Commission has opted to make bidders’ license selections public at the conclusion of the application process, as well as to release the identities of all bidders and their bid amounts at the conclusion of each round during the auction.¹¹ For Auction No. 66, however, the Bureau has proposed to depart from these practices. Instead, the Bureau proposes not to reveal until the close of the auction: (i) bidders’ license selections on their short-form applications and the amount of their upfront payments; (ii) the amounts of non-provisionally winning bids and the identities of bidders placing those bids; and (iii) the identities of bidders making provisionally winning bids. These changes are engendered by the Bureau’s worry that the “particular circumstances of the AWS-1 auction” may lead to increased instances of anticompetitive bid signaling and coordinated auction behavior by bidders.¹² Leap respectfully submits that the Bureau’s concerns are misplaced, and that the

¹⁰ *Auction 66 PN* at 5.

¹¹ *Id.* at 6.

¹² *Id.*

proposed rule change could have profound negative impacts on bidders in the AWS auction.

Over a history of almost twelve years and more than sixty auctions, there have been very few identified instances of the type of anticompetitive coordination that troubles the Bureau here. It is not obvious why the Bureau believes that the AWS auction will be a unique invitation to anticompetitive conduct. In some of the early spectrum auctions, there was evidence that a few bidders used the trailing digits of large bids in an apparent effort to communicate with other bidders. But as Kwerel and Rosston have observed, this problem had a simple solution that the Commission has since implemented, namely, to use “click-box” bidding with fixed bid increments.¹³ Indeed, there is no evidence cited in the *Auction 66 PN* to suggest that the current mechanisms that the Commission has in place to deter or police such conduct are in need of supplementation, or that there has been any coordinated conduct in more recent SMR auctions.

It also appears that the decision to radically change information disclosure in the AWS auction may stem from an inexact application of certain theoretical research. The *Auction 66 PN* cites analyses by Brusco and Lopomo, and by Kwasnica and Sherstyuk, which indicate that the likelihood of coordinated bidding can depend on the ratio of licenses to bidders.¹⁴ However, the applicability of these results to the AWS auction is not at all straightforward. For example, these papers

¹³ See E. Kwerel and G. Rosston, *An Insiders' View of FCC Spectrum Auctions*, *Journal of Regulatory Economics* 17:3 (2000) 253, 279.

¹⁴ *Auction 66 PN* at 6, n.26.

assume that the auctioned lots are all of the same size. But if the lots are of different sizes, such that there are a few large lots and a large number of small lots being auctioned, the theory would suggest that the coordination prospects could be low.

The reason that the coordination prospects can be high in an auction with a large number of small licenses relative to the number of bidders is that bid signaling is not very costly; the opposite is true in an auction with a small number of large licenses. To appreciate why this is the case, compare two auctions that differ only because one auction has many more, smaller licenses – say 100 times as many – as the other. In such a comparison, the cost of a jump bid or other signal in the auction with a large number of small licenses will be 1% of the cost of the same type of signal in the auction with a few large licenses.

The question then becomes whether an auction with a few large licenses, on the one hand, or a large number of small licenses, as the Bureau assumes, is the more relevant predictor of the signaling prospects attending a “mixed” auction, *i.e.*, an asymmetric license auction featuring both types of licenses. Here, one can argue that the more relevant model is *not* an auction featuring multiple license blocks of the same size, but instead an auction with a few large license blocks: the AWS auction features six large REAGs, with the five largest EAs and ten largest CMAs comprising approximately two-thirds of the bidding units in the auction. In such a mixed license auction, to the extent that bidders are concerned and focused

on the large licenses, signaling on small licenses simply may not facilitate coordination.

In any event, the Bureau incorrectly minimizes for this auction the benefits that have historically attended increased information disclosure in the SMR format. In general, the benefits of transparency include (i) bidders can bid more confidently if they know the bids of their potential competitors; (ii) information on the identities of likely other licensees can provide useful technical information, such as the degree of possible signal interference or the potential of negotiating roaming agreements; and (iii) confidence in the auction process.¹⁵ Contrary to the suggestion in the *Auction 66 PN*, each of these benefits is critically important for the AWS auction.

First, the Bureau may be correct that the “evolving market for wireless services and a record of spectrum license sales” generally provides bidders with more information about spectrum values than bidders in early spectrum auctions,¹⁶ but the observation for the most part is irrelevant. It does not obviate the need for bidders to obtain as much information as possible about the competitive environment surrounding a block of spectrum in a particular geographic market. It is important for business planning purposes to know, for example, whether an incumbent licensee is seeking to increase its spectrum position in a market via the auction, or that new entrants may be seeking to enter the region. As a matter of

¹⁵ See *Competitive Bidding Second Report and Order*, 9 FCC Rcd 2348 at ¶¶ 39, 42, 158; *Auction 66 PN* at 6-7, nn. 27-29.

¹⁶ *Auction 66 PN* at 7. Of course, the actual utility of this information is questionable. Spectrum values since the mid-1990’s have been notoriously volatile and vary from service to service.

business practice, in purchasing and developing spectrum asset, a wireless operator wants and needs to know as much about the competitive landscape as possible.

Second, it is unclear why the Bureau believes that technical standards and information conveyed via bidder identities are of more limited value in the AWS auction relative to prior wireless auctions.¹⁷ The assumption, in Leap's view, is absolutely incorrect. In fact, the state of wireless broadband deployment today is similar to the nascent and evolving state of wireless voice in the early PCS auctions – the reasons for providing information disclosure in Auction No. 66 are no less compelling today than they were in Auction No. 5.

AWS license winners will be affected by the technology used by other license winners in adjacent bands. WCDMA uses almost an entire 5 MHz in each direction for a single carrier channel. WCDMA can be vulnerable to interference if a firm in an adjacent band uses a different technology, and such interference can greatly reduce the value of the license as compared to the case in which the adjacent license holder is using the same technology. In addition, from a data-roaming perspective, a bidder for a particular license that has chosen the CDMA digital format may be very interested in the fact that Verizon, which has chosen a CDMA-based Evolution Data Only ("EVDO") path in deploying wireless broadband, has won licenses in surrounding territories. And investors, funding sources or smaller and regional bidders who may question, for example, the availability of terminal equipment in the AWS frequencies may take comfort – and increase their activity and investment

¹⁷ *See id.*

in AWS during the auction – the more they see that larger wireless players are active.¹⁸

More generally, bidder valuations do depend on who else wins licenses and how many bidders win licenses in the market, as well as how much spectrum each bidder has. Concealing this information creates significant risks that bidders could end up paying too much for licenses – and anticipating this “winner’s curse” could cause bidders to be overly aggressive or choose to default or sell off licenses ex post.

Indeed, as the marketplace has become more sophisticated with respect to understanding the FCC’s spectrum auction regime, the Bureau greatly underestimates the importance of fulsome information disclosure at all stages of the auction. Pre-auction, bidders must secure funds and engage in auction planning – and knowing the range and identity of players is critical to that process.¹⁹

¹⁸ AWS spectrum is considered to be suitable for 3G services. The Commission’s previous experience, such as with the WCS spectrum auction (Auction No. 14), suggests that a large determinant of the value of such spectrum is the availability of equipment in the licensed frequency bands, especially terminal equipment and handsets. Large multi-national operators, such as T-Mobile, Vodafone (a 45% owner of Verizon Wireless) and Cingular can be expected to be able to negotiate larger orders, and obtain better prices, than can smaller operators. Indeed, regional operators may not even be able to obtain any handsets or other terminal equipment unless one or more of the large operators is showing adequate interest in this spectrum to induce vendors to produce equipment. The case of the WCS bands is illustrative. The lack of equipment significantly reduced value as compared to original projections. If the large bidders are active in the AWS auction, then smaller bidders would have a much greater assurance that equipment will be available and vice versa.

¹⁹ It also is critical for purposes of bidder compliance with the anti-collusion rules – ironically, the precise concern at issue. Although the Bureau cryptically states that bidders will somehow “be made aware of” other bidders with whom they cannot have discussions, *Auction 66 PN* at n. 30, there are a host of unanswered questions

Furthermore, information about rivals provides competing bidders with information that can allow them to accurately estimate final prices. And from an enforcement perspective, information disclosure allows rivals to track and police anticompetitive conduct by their competitors using the petition to deny or other enforcement processes.²⁰

Third, from an auction integrity and confidence perspective, it is puzzling why the Bureau has proposed such a dramatic deviation from its standard auction methodology in an auction of this stature and importance. In Leap's view, confidence in the Commission's auctions indeed has "been established over the course of many auctions"²¹ – but *precisely because* of the transparency that has been a hallmark of the SMR auction process. The radical deviation and opacity that the Bureau proposes to introduce here – especially given the lack of evidence of anticompetitive behavior to date – is a solution in search of a problem. Leap fears that less transparency will undermine investor and bidder confidence in the auction, not promote it.

regarding how these rules will be modified or applied if Form 175 information is not publicly revealed pre-auction.

²⁰ Ironically, the need to conceal bidder identities to avoid coordinated behavior is probably lowest with respect to an auction such as AWS, where there is an extremely high level of public awareness.

²¹ *Auction 66 PN* at 7.

III. THE PROPOSED EXPONENTIAL SMOOTHING FORMULA FOR SETTING MINIMUM REQUIRED BIDS DOES NOT REDUCE MINIMUM REQUIRED BIDS QUICKLY ENOUGH FOR LARGE LICENSES

The Bureau proposes to calculate minimum acceptable bid amounts by using an activity-based formula.²² The idea of the formula is to allow the minimum increment to fall as bidder interest in a market falls. However, for large licenses – that is, licenses with a large number of activity units – the formula does not fall quickly enough.²³ By the time the increment drops, a bidder who may have stopped bidding with a 30% increment, but one willing to rebid at a 5%, 10% or even 20% increment, would normally not have the eligibility left to do so.²⁴

Given the stakes, increments even as small as one or two percent should be considered for the AWS auction, due to the potential benefits in increased revenues, increased efficiency of the outcome, and greater benefits to consumers. Leap suggests that the increment start at 10% as long as the aggregate eligibility ratio to start the auction remains at 2.0. The increment can be reduced to 5% when

²² *Id.* at 16.

²³ The exponential smoothing formula works relatively well for the smaller licenses, such as those covering regions covering less than one million POPs. The reason this is the case is that activity in those regions can increase and decrease during the auction. For the larger licenses, however, once activity falls, it seldom increases.

²⁴ The experience in the single Los Angeles market in Auction 58 illustrates the reason why the Commission should consider modification of the rule for setting bid increments. In that auction, the last bid in LA occurred in round 6. The final winning bid was just under \$375 million. The minimum bid for LA in round 7 was over \$486 million -- \$112 million, or 30%, above the previous high bid. At the end of Auction 58, the minimum required bid for LA was less than \$393 million -- approximately \$18 million, or 5%, above the winning high bid. It should be clear that a \$96 million dollar difference in the minimum required bid could make a difference to a bidder who was topped in round 6.

the eligibility ratio falls below 1.8 or 2.0. Leap would suggest further reductions in the increment as the aggregate eligibility ratio falls, *e.g.*, to 2% when the eligibility ratio falls below 1.2. Although using smaller increments may extend the length of the auction by a few rounds, the tradeoff is a good one, since it will reduce the likelihood that the final increment that a bidder will effectively see will be excessive.²⁵

Respectfully submitted,

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²⁵ An alternative means of the FCC better controlling the pace of the auction is through use of the clock auction mechanism to set increments. *See* L. Ausubel, P. Cramton, and P. Milgrom, *The Clock-Proxy Auction: A Practical Combinatorial Auction Design*, in P. Cramton, Y. Shoham, and R. Steinberg (eds.), *Combinatorial Auctions*, Chapter 5, 115-138 (MIT Press 2006). Recent theory and experience in the energy sector with clock auctions show that using a clock to set increments can improve the process and the outcome. *See* C. Loxley and D. Salant, *Default Service Auctions*, *Journal of Regulatory Economics* 26:2 (2004) 201-229.

